

**RAC-2200-X/Y-MV  
DOMESTIC WATER METER  
TEST BENCH UP TO DN 50 ( 2”)  
MANUALLY OPERATED**



**Actaris DEC division**

## 1. DESCRIPTION

The manually operated RAC 2200 is a residential cold water meter test bench based on the volumetric testing principle. It has been designed to test water meters with a maximum diameter up to DN 50 ( 2"). The maximum flow rate corresponds to Qmax..

The standard configuration can test from 5 to 20 meters ½" with length 115 mm size. Please refer to the economic offer to get the specific number of meters that best fit to your needs, taking into account that increasing the number of meters under test, the productivity of the installation will be increased. The test bench is connected either to the customer own water supply or to a specially designed closed circuit installation .

## 2. MAIN CHARACTERISTICS

### 2.1Generated Test Flow rates

The RAC 2200 is designed to test water meters at flow rates from 0.01 m<sup>3</sup>/h up to 30 m<sup>3</sup>/h through the use of four regulation lines equipped with each one with variable area flow meters:

The first line covers the flow range between 0.01 m<sup>3</sup>/h to 0.1 m<sup>3</sup>/h.

The second line covers the flow range between 0.1 m<sup>3</sup>/h to 1m<sup>3</sup>/h.

The third line covers the flow range between 1 m<sup>3</sup>/h to 10 m<sup>3</sup>/h.

The fourth line covers the flow range between 2.5 m<sup>3</sup>/h to 30 m<sup>3</sup>/h.

Or with pilot meters:

Precision Electromagnetic flow meters:

MID DN 40 for flow rates 1 - 20 m<sup>3</sup>/h.

MID DN 6 for flow rates 0.01 -1 m<sup>3</sup>/h.

Depending on the economical offer details and customer selection.

All regulation lines are equipped with his own isolation and flow rate regulation valves, with an accuracy of 1% at full scale in the case of the variable area flow meters and 0.5% in the case of the electromagnetic flow meters.

## **2.2 Test vessels**

### **Graduated test tanks**

Two stainless steel graduated test tanks from the three possible, with the necessary drain valves are included having the following characteristics :

#### 10 l tank

Nominal capacity : 10 l, +5%.  
Resolution : 0.01 l in the measuring area  
Accuracy : 0.2% for a 10 l volume.

#### 100 l tank

Nominal capacity : 100 l, +5%.  
Resolution : 0.1 l in the measuring area.  
Accuracy : 0.2% for a 100 l volume.

#### 200 l tank

Nominal capacity : 200 l, +5%.  
Resolution : 0.2 l in the measuring area.  
Accuracy : 0.2% for a 200 l volume.

The graduated scale can be customized to the local unit system (British units) upon request.



### **2.3 Test pipes and valves**

#### Valve set

The RAC 2200 is equipped with valves made of stainless steel or brass, depending on their specific function.

#### Pipes

The RAC 2200 has a complete water pipe network made of stainless steel material.

### **2.4 Test Table**

#### Test bench rig

Steel treated with special anti-corrosion paint.

Connection to the water supply

Connection for the graduated test tank drain

Capacity of meters connected in series :

As two **examples** we give for the maximum capacity for 20 water meters and for 5:

Length (mm)	Diameter (mm)	Connection (thread)	Meters capacity

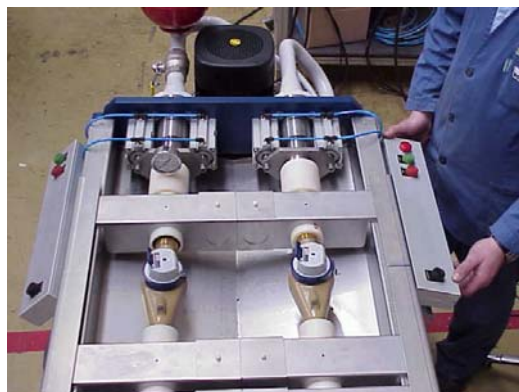
170	15	3/4"	20
190	20	1"	18
260	25	1 1/4"	12
300	40	2"	12
300	50	2"	8

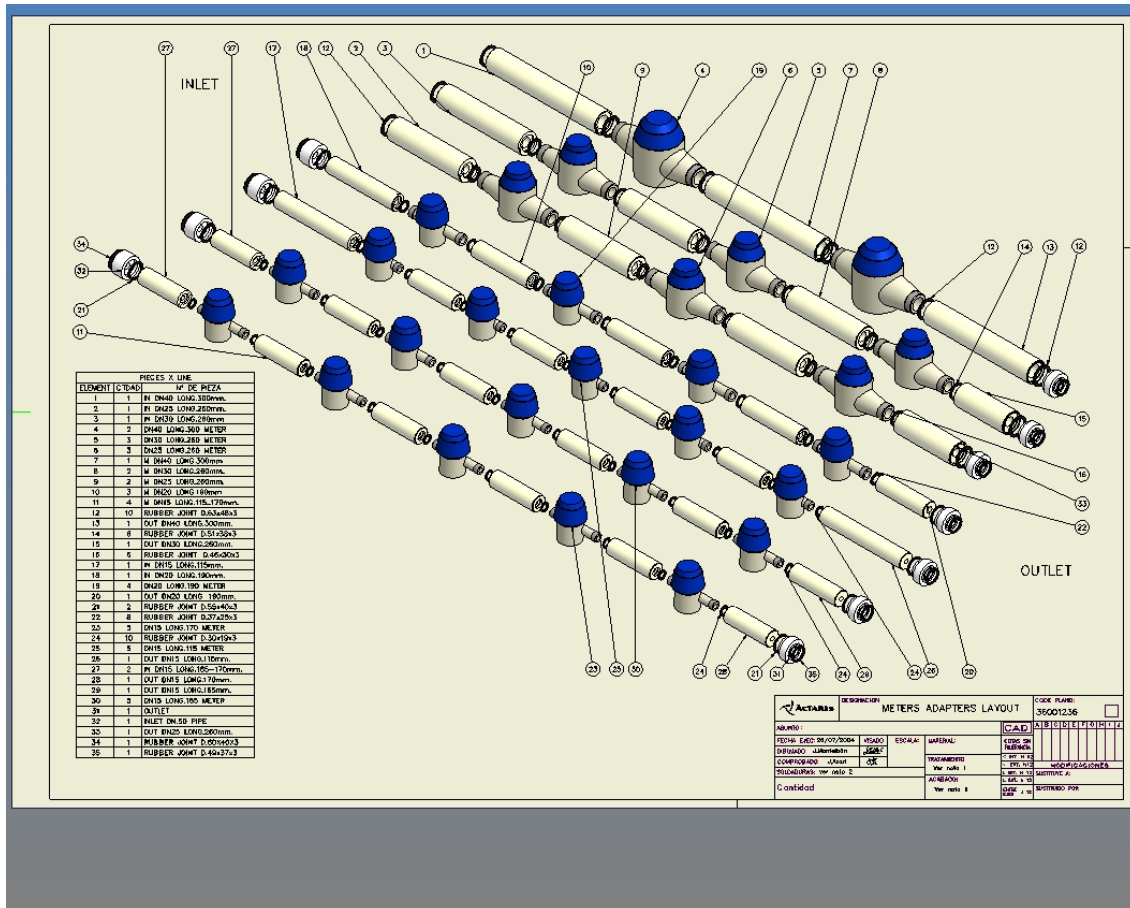
*note : other length sizes available under special request*

Length (mm)	Diameter (mm)	Connection (thread)	Meters capacity
165	13	3/4"	5
180	13	3/4"	5
190	20	1"	4
260	25	1 1/4"	3
260	30	1 1/2"	3
300	40	2"	2
300	50	2"	1

- Set of meter couplings

Together with the RAC 2200, a complete set of standard couplings is included, according the distribution of nominal diameters and lengths showed above. The meters are connected on the bench means a pneumatic operated system.





### Instruments

The following measuring instruments are included on standard delivery of RAC2200 series :

Thermometer for direct reading of water temperature, 0-60°C

One manometer with glycerin bath for inlet water pressure measurement, scale 0-25 bar

### 2.5 Closed Water Circuit System (avoid the connection to an external water supply)

Water pumping group with a maximum flow rate capacity of 20 m<sup>3</sup>/h. (max flow could be up to 30 m<sup>3</sup>/h depending on economical offer).

The RAC 2200 can be equipped with a closed water circuit, made of the following items :

- up to 1200 l stainless steel water deposit,
- Water pump - Max. Flow 20 m<sup>3</sup>/h - 7,5 kW, (max flow could be 10 or 30 m<sup>3</sup>/h depending on economical offer).
- Electrical rack including a safety system,
- By-pass for the pump circuit,

- Pressure wave absorber system.

## **2.6 Automatic flow stop system**

Two level detectors installed with the tanks offers the possibility to stop the flow when the requested volume has been reached means a pneumatically operated valve, without intervention of the operator.

The control of on-off valve must be done by supply of a compressed air line, minimum 6 bar and 125 l/h.

## **2.7 Air Release System ( air vacuum device ) using Venturi system**

The air release of the meters under test could be done by flushing method, where before test an amount of water ( i.e 50-60 liters ) shall be circulating by the whole piping.

To have a better air vacuum results , as option could be used a Venturi ejector, that avoid the need to use a meters row turning device. This solution is strongly recommended, due the problems of periodical maintenance involved on piping turning system.

## **OPTIONS :**

### **Error calculation system**

For the error calculation, a system is proposed including a special designed software and a portable hand held terminal (HT), to calculate automatically the error of the meters. The proposed hand held terminal has the following technical characteristics :

- Microprocessor : Type 8088c ( MHz)
- Non volatile memory : 256 KB, protected area
- RAM memory : up to 1,1 MB
- Keyboard : Alphanumeric, 35 key, tactile effect.
- Display : 4 lines, 20 characters each,
- ROM : 128 KB EPROM, (under DOS, BIOS and diagnostic programs
- Interface : DE9 connector, support for communication and battery charge.



The hand held terminal can be upgraded enabling the use with the same unit of a bar code reader.

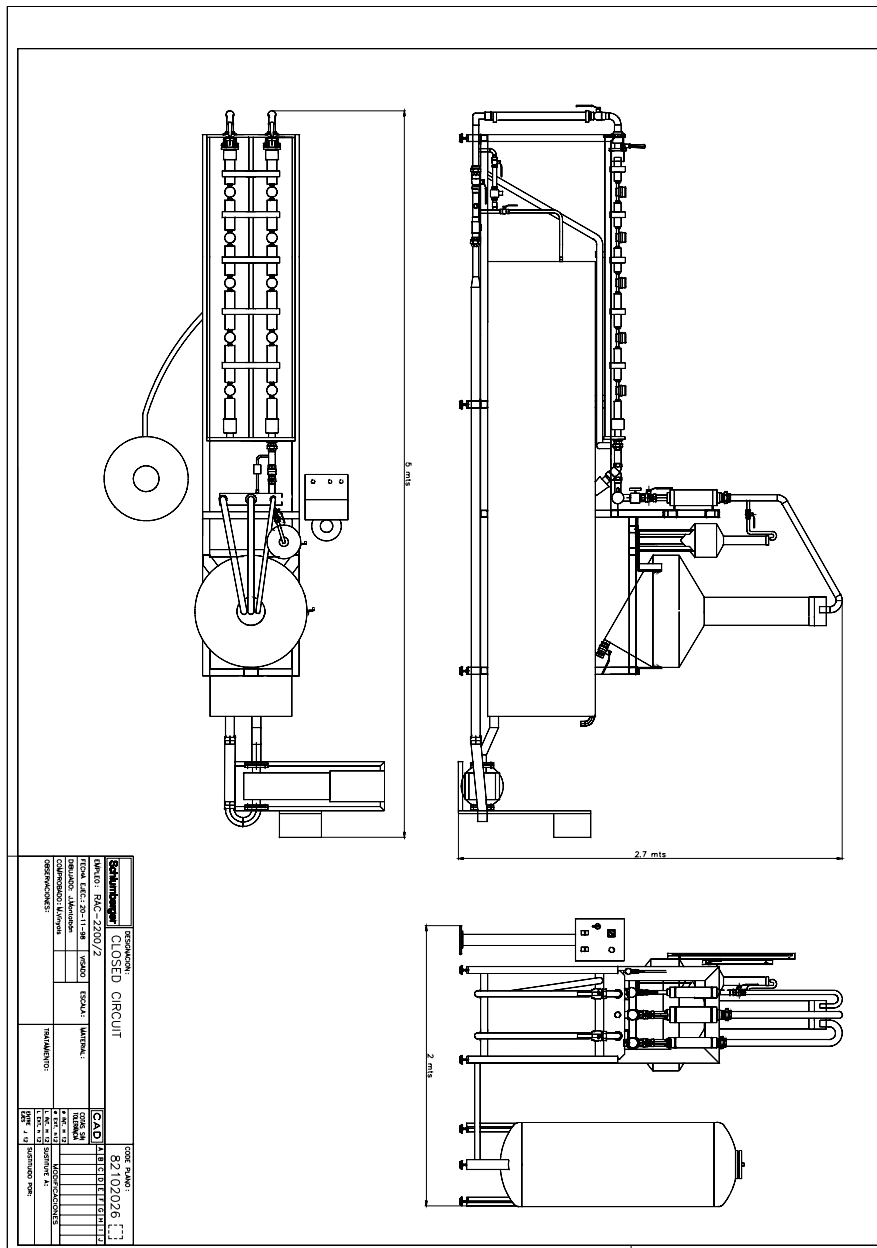
**Air compressor, to be used to drive the pneumatic valves for start-stop system.**

In case the customer don't have an air compressed line on the test room, the equipment could be inclusive of an air compressor, with the following characteristics:

- Deposit volume : 15 l.
- Working pressure : 7 bar.
- Maximum pressure : 10 bar.
- Power : 0,75 kW



RAC 2200 SERIES : SQUEMATIC EXAMPLES



RAC 2200 WORKING WITH CLOSED CIRCUIT SYSTEM . On this drawing is showed the pumping system and also the hydropneumatic accumulator, in charge to provide the water flow. Also the draining tank , used as water reserve, could be found below the meters under test.

Remark

Actaris reserves the right of technical alterations of individual components not affecting the functioning as well as the replacement of units offered by similar, comparable ones.